



Designation: D1448 – 05

Standard Test Method for Micronaire Reading of Cotton Fibers¹

This standard is issued under the fixed designation D1448; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope

1.1 This test method covers the determination of the micronaire reading of loose cotton fibers by measuring the resistance of a plug of cotton fibers to air flow under prescribed conditions.

NOTE 1—For other methods for determining the fineness of fibers based on the air-flow principle, refer to Test Method D1449, Test Method for Specific Area and Immaturity Ratio of Cotton Fibers (Arealometer Method),² and to Test Method D1282, Test Method for Resistance to Air Flow as an Indication of Average Fiber Diameter of Wool Top, Card Sliver, and Scoured Wool.

1.2 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*²

D123 Terminology Relating to Textiles

D1282 Test Method for Resistance to Airflow as an Indication of Average Fiber Diameter of Wool Top, Card Sliver, and Scoured Wool

D1441 Practice for Sampling Cotton Fibers for Testing

D1449 Discontinued 1978; Method of Test for Specific Area and Immaturity Ratio of Cotton Fibers (Arealometer Method)³

D1776 Practice for Conditioning and Testing Textiles

D7139 Terminology for Cotton Fibers

3. Terminology

3.1 For all terminology related to D13.11, refer to Terminology D7139.

3.1.1 The following terms are relevant to this standard: calibration cotton standards, fineness, micronaire reading,.

3.2 For all other terminology related to textiles, refer to Terminology D123.

4. Summary of Test Method

4.1 The resistance a plug of cotton fibers offers to the flow of air is measured as an approximate indication of the fineness of fiber. A predetermined mass of loose cotton fibers is placed in the specimen holder and compressed to a fixed volume. The resistance to air flow is measured and expressed as micronaire reading. Instruments available to measure resistance to air flow use compressed air or vacuum and are constructed to measure air flow under constant pressure drop across the plug, to measure pressure drop when a constant flow of air is maintained, or to indicate resistance to air flow from both a balanced and unbalanced wheatstone bridge.

5. Significance and Use

5.1 This test method for determining micronaire reading of cotton fibers is considered satisfactory for acceptance testing of commercial shipments when the levels are controlled by use of a full range of calibration cotton standards.

5.1.1 In case of a dispute arising from differences in reported test results when using this test method for acceptance testing of commercial shipments, the purchaser and the supplier should conduct comparative tests to determine if there is a statistical bias between their laboratories. Competent statistical assistance is recommended for the investigation of bias. As a minimum, the two parties should take a group of test specimens that are as homogeneous as possible and that are from a lot of material of the type in question. The test specimens should then be randomly assigned in equal numbers to each laboratory for testing. The average results from the two laboratories should be compared using Student's *t*-test for unpaired data and an acceptable probability level chosen by the two parties before the testing is begun. If a bias is found, either

¹ This test method is under the jurisdiction of ASTM Committee D13 on Textiles and is the direct responsibility of Subcommittee D13.11 on Cotton Fibers.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ Withdrawn. The last approved version of this historical standard is referenced on www.astm.org.